

# AIRWAY MANAGEMENT DISASTERS – LESSONS FROM THE UNITED KINGDOM

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**SUMMARY** – The Fourth National Audit Project (NAP4) was set up by the Royal College of Anaesthetists and Difficult Airway Society to provide an insight into major complications of airway management in the United Kingdom. The NAP4 found that one serious airway complication such as death, brain damage, the need for surgical airway or unexpected intensive care admission, was reported for every 5500 general anaesthetics. Most of the events happened during daytime to a senior experienced clinicians. Airway assessment was not recorded before surgery in 74% of patients that ended up with life threatening airway complications. Aspiration was responsible for 26% of life threatening airway complications and for 50% of all deaths. The NAP4 found that airway problems were twice as common in obese patients (BMI 30-35) and four times as common in morbidly obese (BMI >35). Awake fiberoptic intubation was indicated and not performed in a significant number of reported incidents. Thirty percent of serious airway complications were associated with extubation or removal of laryngeal mask airway at the end of anaesthesia. The findings of the NAP4 have the potential to significantly influence airway management practice of all anaesthetists irrespective of where in the world they practice anaesthesia.

**Key words:** *Airway management; Complications*

Airway complications during anaesthesia can result in death or significant morbidity. The Fourth National Audit Project (NAP4)<sup>1</sup> was set up by the Royal College of Anaesthetists and Difficult Airway Society to provide an insight into major complications of airway management in the United Kingdom. The NAP4 was set to provide prospective examination of the serious airway complications: death, brain damage, surgical airway or unexpected intensive care unit admission due to airway complications. Even in countries like United Kingdom, where airway management during anaesthesia is considered to be very safe, the NAP4 reported 'poor airway management in over 75% of reports'. The findings of the NAP4 have the potential to significantly influence airway management practice

of all anaesthetists irrespective of where in the world they practice anaesthesia<sup>2-6</sup>.

The NAP4 was set to answer the following questions:

- What types of airway devices are used in everyday anaesthetic practice,
- How often do major complications of airway management occur, and
- What can we learn from them

The main findings of the NAP4:

- Type of airway device: The UK anaesthetists give 2.9 million of general anaesthetics every year
  - 56% managed with laryngeal mask airways
  - 38% with tracheal tube
  - 5% with a face mask
- How often: One serious airway complication such as death, brain damage, the need for surgical airway or unexpected intensive care admission, in 5500 anaesthetics. How likely is it to happen to you? Quite

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likely during your anaesthetic career on more than one occasion. Most of the events happened during daytime to a senior experienced clinician.

What can we learn from it:

- o Airway assessment was not recorded before surgery in 74% of patients that ended up with life threatening airway complication.

The NAP4 concludes that all patients, irrespective of the planned type of anaesthesia, should have an airway assessment before surgery.

- o Laryngeal mask airway was involved in 25% of airway complications. The use of the laryngeal mask airway was associated with poor patient selection (obese patients and patients with predicted difficult airway), poor operation selection (patient in head down position having laparoscopic procedure) and inexperienced use.

The NAP4 recommends that laryngeal mask airway skill should be taught with the same attention to detail as tracheal intubation.

Suboptimal placement of the laryngeal mask airway in the beginning of anaesthesia should not be accepted as most of the events happened during maintenance and emergence phase of anaesthesia.

- o Aspiration was responsible for 26% of life threatening airway complications and for 50% of all deaths. The events were associated with failure to recognize the risk factors and failure to adjust the anaesthetic technique accordingly.

The NAP4 recommends that aspiration risk assessment should be part of the airway management strategy. If in doubt about the level of aspiration risk assume higher risk.

- o Obesity – the NAP4 found that airway problems were twice as common in obese patients (BMI 30-35) and four times as common in morbidly obese (BMI >35). In morbidly obese patients there is no such thing as minor anaesthetic.

The NAP4 recommends that obese patients should be managed with experienced anaesthetist present. In obese patients who are predicted to be more likely to be difficult to mask ventilate, difficult to intubate or difficult to establish surgical airway, awake fibreoptic

intubation is the most suitable airway management technique.

- o Awake fibreoptic intubation was indicated and not performed in a significant number of reported incidents. Fibreoptic intubations during general anaesthesia all failed and required airway rescue with surgical airway. General anaesthesia fibreoptic intubation with a laryngeal mask airway as a conduit was successful in 7 of the 14 reports where this technique was tried.

The NAP4 states that awake fibreoptic intubation is underutilized. They recommended that if awake fibreoptic intubation is your primary plan then perform it while the patient is awake and not after inducing general anaesthesia.

- o Extubation – 30% of serious airway complications were associated with extubation or removal of laryngeal mask airway at the end of anaesthesia. Several of these cases were associated with unrecognized airway obstruction after removal of the tracheal tube or laryngeal mask airway.

Although some may consider the reported incidence of problems to be low, the need for a safe and effective airway management has never been greater. The NAP4 report has provided the international community with the extremely valuable source of information. Only part of it is discussed in this review. We all have a duty to look at the incidents reported in the NAP4, analyse them and apply the conclusions to our everyday practice.

## References

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### Sažetak

## KOMPLIKACIJE U ZBRINJAVANJU DIŠNOGA PUTA – POUKE IZ UJEDINJENOG KRALJEVSTVA

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Kraljevsko udruženje anesteziologa i Društvo za zbrinjavanje otežanoga dišnog puta u Velikoj Britaniji su započeli Četvrti nacionalni istraživački projekt (NAP4) kako bi se pobliže istražile značajne komplikacije povezane sa zbrinjavanjem dišnog puta u Ujedinjenom Kraljevstvu. Projekt NAP4 je pokazao da na svakih 5500 općih anestezija dolazi do jedne ozbiljne komplikacije povezane s dišnim putem; radilo se o smrti, oštećenju mozga, potrebi za kirurškim osiguravanjem dišnog puta ili neplaniranom prijmu u jedinicu intenzivnog liječenja. Većina tih komplikacija dogodila se tijekom dnevne smjene i to starijim, iskusnim anesteziolozima. U 74% bolesnika kod kojih je došlo do životno ugrožavajućih komplikacija povezanih sa zbrinjavanjem dišnog puta procjena istoga nije bila zabilježena prije operacije. Aspiracija je bila uzrok životno ugrožavajućih komplikacija u 26% slučajeva, a odgovorna je i za 50% smrtnih ishoda. Projektom NAP4 pokazano je da su problemi s dišnim putom dva puta češći kod pretilih (BMI 30-35 kgm<sup>-2</sup>) i četiri puta češći kod patološki pretilih bolesnika (BMI >35 kgm<sup>-2</sup>). U značajnom postotku uočenih incidenata fiberoptička intubacija u budnosti bila je indicirana, no nije bila primijenjena. Trideset posto ozbiljnih komplikacija u zbrinjavanju dišnog puta bilo je povezano s ekstubacijom ili uklanjanjem laringealne maske na kraju anestezije. Rezultati nacionalnog projekta NAP4 mogli bi značajno utjecati na način zbrinjavanja dišnog puta bilo gdje u svijetu.

*Ključne riječi: Zbrinjavanje dišnog puta; Komplikacije*

